03/23/00
JC542 U.S. PTO

BIRCH, STEWART, KOLASCH & BIRCH, LLP

INTELLECTUAL PROPERTY LAW
8110 GATEHOUSE ROAD
SUITE 500 EAST
FALLS CHURCH, VA 22042-1210
U S A
(703) 205-8000

FAX: (703) 205-8050
(703) 698-8590 (G IV)

e-mail: mailroom@bskb.com
web: http://www.bskb.com

CALIFORNIA OFFICE:
COSTA MESA, CALIFORNIA

TERRELL C. BIRCH
RAYMOND C. STEWART
JOSEPH A. KOLASCH
JAMES M. SLATTERY
BERNARD L. SWEENEY*
MICHAEL K. MUTTER
CHARLES GORENSTEIN
GERALD M. MURPHY, JR
LEONARD R. SVENSSON
TERRY L. CLARK
ANDREW D. MEIKLE
MARC S. WEINER
JOE McKINNEY MUNCY
ROBERT J. KENNEY
DONALD J. DALEY
JOHN W. BAILEY
JOHN A. CASTELLANO, III
GARY D. YACURA

OF COUNSEL
HERBERT M. BIRCH (1905-1996)
ELLIOT A. GOLDBERG*
WILLIAM L. GATES*
EDWARD H. VALANCE
RUPERT J. BRADY (RET.)*

*ADMITTED TO A BAR OTHER THAN VA

THOMAS S. AUCHTERLONIE
MICHAEL R. CAMMARATA
JAMES T. ELLER, JR.
SCOTT L. LOWE
MARK J. NUELL, Ph.D.
DARIN E. BARTHOLOMEW*
D. RICHARD ANDERSON
PAUL C. LEWIS
W. KARL RENNER
MARK W. MILSTEAD*
JOHN CAMPA*

REG. PATENT AGENTS
FREDERICK R. HANDREN
ANDREW J. TELESZ, JR.
MARYANNE ARMSTRONG
MAKI HATSUMI
MIKE S. RYU
CRAIG A. McROBBIE
GARTH M. DAHLEN, Ph.D.
LAURA C. LUTZ
ROBERT E. GOOZNER, Ph.D.
HYUNG N. SOHN
MATTHEW J. LATTIG
ALAN PEDERSEN-GILES
JUSTIN D. KARJALA
C. KEITH MONTGOMERY

Date: March 23, 2000
Docket No.: 0630-1061P

Assistant Commissioner for Patents
Box PATENT APPLICATION
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of

Inventor(s): LEE, Jae Kyung
HWANG, Ji Yeon

For: METHOD FOR DISPLAYING MENU SCREEN OF VIDEO APPARATUS

Enclosed are:

X A specification consisting of 12 pages

X 6 sheet(s) of formal drawings

X An assignment of the invention

X Certified copy of Priority Document(s)

X Executed Declaration X Original ___ Photocopy

___ A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27

X Preliminary Amendment

___ Information Disclosure Statement, PTO-1449 and reference(s)

___ Other _____

The filing fee has been calculated as shown below:

			LARGE ENTITY			SMALL ENTITY	
FOR	NO. FILED	NO. EXTRA	RATE	FEE		RATE	FEE
BASIC FEE	********** ********** **********	********** ********** **********	***** ***** *****	$690.00	or	**** **** ****	$345.00
TOTAL CLAIMS	14 - 20 =	0	x18 =$	0.00	or	x 9 = $	0.00
INDEPENDENT	4 - 3 =	1	x78 =$	78.00	or	x 39 = $	0.00
MULTIPLE DEPENDENT CLAIM PRESENTED ___			+260 = $	0.00	or	+130 = $	0.00
			TOTAL $	768.00		TOTAL $	0.00

_X_ A check in the amount of $__808.00__ to cover the filing fee and recording fee (if applicable) is enclosed.

___ Please charge Deposit Account No. 02-2448 in the amount of $_____. A triplicate copy of this transmittal form is enclosed.

_X_ No fee is enclosed.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. 1.16 or under 37 C.F.R. 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By_____

TERRY L. CLARK
Reg. No. 32,644
P. O. Box 747
Falls Church, Virginia 22040-0747

(703) 205-8000
TLC/cw

PATENT
630-1061P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant:	LEE, Jae Kyung et al		
Appl. No.:	new	Group:	unknown
Filed:	March 23, 2000	Examiner:	unknown
For:	METHOD FOR DISPLAYING MENU SCREEN OF VIDEO APPARATUS		

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, DC 20231

March 23, 2000

Sir:

The following preliminary amendments and remarks are respectfully submitted in connection with the above-identified application.

IN THE CLAIMS:

CLAIM 5: Line 1, change "claim 2, 3 or 4" to --claim 2--

CLAIM 6: Line 1, change "claim 2, 3 or 4" to --claim 2--

CLAIM 7: Line 1, change "claim 2, 3 or 4" to --claim 2--

PLEASE ADD THE FOLLOWING NEW CLAIMS:

--CLAIM 9: The method according to claim 3, wherein the pairs of menus consisting of a predetermined menu and its corresponding lower menu are displayed to be differentiated by using blocks.

CLAIM 10: The method according to claim 4, wherein the pairs of menus consisting of a predetermined menu and its corresponding lower menu are displayed to be differentiated by using blocks.

CLAIM 11: The method according to claim 3, wherein the pairs of menus consisting of a predetermined menu and its corresponding lower menu are displayed to be differentiated by using shading difference.

CLAIM 12: The method according to claim 4, wherein the pairs of menus consisting of a predetermined menu and its corresponding lower menu are displayed to be differentiated by using shading difference.

CLAIM 13: The method according to claim 3, wherein the pairs of menus consisting of a predetermined menu and its corresponding lower menu are displayed to be differentiated by using colors.

CLAIMS 14: The method according to claim 4, wherein pairs of menus consisting of a predetermined menu and its corresponding lower menu are displayed to be differentiated by using colors.--

REMARKS

The amendment to the claims is merely to correct improper Claims in order to place the application in better form prior to examination.

Favorable action on the above-identified application is Respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By _____
Terry L. Clark Reg.#32644
Reg No. 55,416

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

630-1061P

METHOD FOR DISPLAYING MENU SCREEN OF VIDEO APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a video apparatus, and more particularly to a method for displaying a menu screen of a video apparatus such as a television set.

2. Description of the Background Art

As development of an video technique is progressed, currently, various video apparatuses such as a computer or a television set are gradually coming out of the technique that various menus related to the operation of the video apparatus are selected by keys provided in its main body, and instead, a method for selecting corresponding menus by using a few keys such as a direction key or a selection key with reference to a menu screen displayed in an OSD form is becoming generalized.

Accordingly, in order for users to facilitate the selection for the corresponding menus, it is requisite to develop a technique implementing the menu screen.

Especially, according to the development of a multimedia technique, as for the television set, the most popular video apparatus, the menu screen-related technique facilitating setting various functions as well as sound quality is the most critical factor in improving the competitive power of the product.

Figure 1 shows a video apparatus in accordance with a conventional art,

taking an example as a television set, which includes an antenna, a tuner 100 for selecting a broadcast signal; an audio signal processing unit 200 for processing an audio signal included in the broadcast signal; a speaker 300, a remote controller 400, a remote controller light receiving unit 500, a microcomputer 600 for controlling each element, displaying an operation state, and processing OSD signals for implementing a menu screen; an image signal selection unit 700 for selectively switching the broadcast image signal and the OSD signal outputted from the microcomputer 600; an image signal processing unit 800 for processing the broadcast image signal so as to be displayed on a screen; and a CRT 900.

Displaying the menu screen according to the conventional art constructed as described above will now be explained with reference to Figures 1 and 2.

First, the broadcast signal received through the antenna is converted to an intermediate frequency for a desired channel through the tuner 100 and then outputted as an image and audio signals.

And, the audio signal is processed by the audio signal processing unit 200 and outputted through the speaker 300.

Meanwhile, the image signal and the OSD signal for displaying the operation state or constructing the menu screen outputted from the microcomputer 600 are selectively switched under the control of the microcomputer 600 and then processed by the image signal processing unit 800, to be outputted to the CRT 900.

The microcomputer 600 receives an operation command through the remote controller light receiving unit 500 as inputted through the remote controller 500 by a user, and applies a control signal to each element, so as to perform the operation command of the user.

Referring to the menu screen of the television set in accordance with the conventional art, as the user pressed down a menu setting key, the microcomputer 600 receiving the corresponding key to thereby recognize the menu setting command of the user.

Subsequently, the image data for constructing the menu screen as pre-set is OSD signal-processed and outputted, and the OSD data is processed by the image selection unit 700 and the image signal processing unit 800, so as to be displayed on the CRT 900 as shown in Figure 2A.

When the user selects a channel, that is, 'CH', of upper menus displayed on the menu screen, corresponding lower menus are also displayed as shown in Figure 2B.

Here, 'INPUT' is a menu for selecting an external image input signal such a TV signal or a VCR signal, 'AUTO PROG' is a menu for automatically searching and memorizing a channel having a signal, 'MANUAL PROG' is a menu for manually searching and memorizing a channel having a signal, and 'FAVORITE CH' is a menu memorizing favorite channels of the user. In this respect, the menu selected by the user may have a different color in order to make difference from other menus.

As described above, as to the menu screen of the video apparatus of the conventional art, the lower menus of the menu selected by the user are additionally displayed or the color of the selected menu is varied, which is, however, not satisfying enough to easily recognize the menu selected by the user or a corresponding menu or a path of the corresponding menu, causing inconvenience for the user in selecting the menus.

SUMMARY OF THE INVENTION

Therefore, an object of the present invention is to provide a method for displaying a menu screen of a video apparatus which is capable of easily recognizing a menu currently selected by a user and its processing path.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention.

In the drawings:

Figure 1 is a schematic block diagram showing a construction of a television set in accordance with a conventional art;

Figures 2A and 2B are exemplary view of menu screens of Figure 1 in accordance with the conventional art;

Figure 3 is a flow chart of a first embodiment of a method for displaying a menu screen in accordance with the present invention;

Figure 4 shows menu screens of Figure 3 in accordance with the present invention;

Figure 5 is a flow chart of a second embodiment of a method for displaying a menu screen in accordance with the present invention; and

Figure 6 shows menu screens of Figure 3 in accordance with the present

invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

According to the first embodiment of the present invention, the finally selected menu of the menu displayed on the menu screen is displayed in a predetermined color, and the upper menus corresponding to the path of the finally selected menu are displayed in the same colors, which is different to the predetermined color of the finally selected menu.

According to the second embodiment of the present invention, pairs of menus consisting of a predetermined menu of the menu screen and its corresponding lower menus are displayed in a single block having its own color, and finally selected menus are displayed in the different color from that of the other menus.

According to the third embodiment of the present invention, which is obtained by mixing the first and the second embodiments of the present invention, pairs of menus consisting of a menu selected by a user and its lower menus are displayed in a single block which is colored in a specific color, and the upper menus corresponding to the path of the finally selected menu are displayed in the same color, which is different from the display color of the finally selected menu.

Methods for display a menu screen of a video apparatus in accordance with the first, second and the third embodiments of the present invention will now be described with reference to the accompanying drawings.

Figure 3 is a flow chart of a first embodiment of a method for displaying a menu screen in accordance with the present invention.

First, it is judged whether a menu setting key was pressed by the user (S10). If the menu setting key is pressed down, the first step menu is outputted (S11) and the selected menu is displayed in a first color, that is, red color (S12).

And, a step register for displaying the steps that are being displayed is set as '1' (S13).

Meanwhile, upon the judgement (S10), if the menu setting key was not inputted, it is judged whether the next step selection key was inputted (S14). Subsequently, upon the judgement (S14), if the next step selection key was inputted, it is judged whether the step register is of the maximum value (S15). If the step register is not of the maximum value, that is, if there exist the next step, the next step menu is outputted (S16), as shown in Figure 4, the menu item corresponding to its path, that is, 'CH', is changed to a second color, blue color, and the selected menu 'FAVORITE CH' is displayed in the first color, that is, the red color (S17).

And, if the next step selection key is again inputted, the step (S15) is performed, and as shown in Figure 4, the next step menus (CATV 03, TV 05 and TV 07) are outputted (S16), the menu item corresponding to the path, that is, 'CH' and 'FAVORITE CH' are changed to be displayed in the second color, the blue color, and the current selection menu of 'CATV 03' is displayed in the first color, the red color.

Meanwhile, if a previous step selection key is inputted (S18), it is judged whether the step register is of '1' (S19). If the step register is not of '1', that is, if more than two steps are displayed on the current screen, the current step menu is

turned OFF (S20) and the step register is reduced by '1' (S21).

If an up/turn key is inputted (S22), the selection menu item is changed and the corresponding menu is displayed in the first color, the red color (S23).

Consequently, according to the first embodiment of the present invention, the finally selected menu is displayed in the first color, that is, the red color, and the upper menus corresponding to its path are displayed in the uniform color of the second color, that is, the blue color, so that it is easy for the user to currently recognize the finally selected menu of him and its path.

The second embodiment of the present invention will now be described.

First, it is judged whether a menu setting key is pressed down by a user (S30). Upon the judgement, if the menu setting key was pressed down, the first step menu is outputted (S31), of which the selected menu is displayed in a different color from that of the other menus (S32), and the step register displaying the step that is currently being displayed is set as '1' (S33).

Meanwhile, upon the judgement (S30), if the menu setting key was not inputted, it is judged whether the next step selection key was inputted (S34). Upon the judgement, if the next step selection key was inputted, it is judged whether the step register is of the maximum value.

Subsequently, upon the judgement (S35), if the step register is not of the maximum value, that is, if there exists the next step, as shown in Figure 6A, the menu items of the next step, that is, 'INPUT', 'AUTO PROG', 'MANUAL PROG', and 'FAVORITE CH' and the menu item corresponding to its path, that is, 'CH', are displayed in a block noticeably different from the previous menu (S36), and the again selected menu item, 'FAVORITE CH', is displayed in a noticeably different block and in a color noticeably different from the other menus (S37). At this time, if

the next step selection key is again inputted, as shown in Figure 6B, the finally selected menu item becomes 'TV 07' in the same manner as described above.

In this respect, the block displaying 'CH' and its corresponding lower menus is displayed additionally so as to be differentiated from the block having the initial upper menus, as if it was on the different level. That is, the blocks are three-dimensionally displayed so that they are viewed by the user as if the block displaying 'CH' and its corresponding lower menus existed at a higher level than the block consisting of the initial upper menus.

Besides the methods mentioned above, as the menu selections are proceeding, the blocks are sequentially displayed to have a shading difference, that is, to be gradually brightened or darkened in the same color, or, each block may be differentiated in different colors to each other.

Meanwhile, if the previous step selection key is inputted (S38), it is judged whether the step register is of '1' (S39). If the step register is not of '1', that is, more than two steps are currently displayed on the screen, the current step menu is turned OFF (S40), and the step register is decreased by '1' (S41).

Resultantly, according to the second embodiment of the present invention, the selected menu and its lower menus are displayed in one block and the corresponding block is displayed at a higher level or at a lower level as if they it existed in the different level from the other block, and, each block can be displayed in the same color having shading different or in the different color, so that the user can easily recognize the menu selected by himself, which facilitates to operate menu selection by him.

The third embodiment of the present invention is obtained by adopting the first and the second embodiments, as shown in Figure 7. That is, the finally

selected menu (TV 07) of the second embodiment is displayed in a specific color (red color) and the menus (FAVORITE CH, CATV 03 and TV 05) corresponding to the path are displayed in the same color (blue color), different from the specific color.

As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described embodiments are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the meets and bounds of the claims, or equivalence of such meets and bounds are therefore intended to be embraced by the appended claims.

What is claimed is:

1. A method for displaying a menu screen of a video apparatus which displays images, in which a finally selected menu of the menus displayed on a screen is displayed in a predetermined color, and the upper menus corresponding to the path of the finally selected menu are displayed in the same color, which is different from the predetermined color.

2. A method for displaying a menu screen of a video apparatus which displays images, in which pairs of menus consisting of a menu of menus displayed on a screen and its corresponding lower menu are displayed to be differentiated from other menus.

3. A method for displaying a menu screen of a video apparatus which displays images, in which pairs of menus consisting of a menu of menus displayed on a screen and its corresponding lower menu are displayed to be differentiated from other menus, and a finally selected menu is displayed in a predetermined color different from that of other menus.

4. A method for displaying a menu screen of a video apparatus which displays images, in which pairs of menus consisting of a menu of menus displayed on a screen and its corresponding lower menu are displayed to be differentiated from other menus, and the upper menus of a finally selected menu are displayed in the same color which is different from the display color of the finally selected menu.

5. The method according to claim 2, 3 or 4, wherein the pairs of menus consisting of a predetermined menu and its corresponding lower menu are displayed to be differentiated by using blocks.

6. The method according to claim 2, 3 or 4, wherein the pairs of menus consisting of a predetermined menu and its corresponding lower menu are displayed to be differentiated by using shading difference.

7. The method according to claim 2, 3 or 4, wherein the pairs of menus consisting of a predetermined menu and its corresponding lower menu are displayed to be differentiated by using colors

8. The method according to claim 3, wherein the block is displayed three-dimensionally so as to show its height.

ABSTRACT OF THE DISCLOSURE

A method for displaying a menu screen of a video apparatus which displays images, in which a finally selected menu of the menus displayed on a screen is displayed in a predetermined color, and the upper menus corresponding to the path of the finally selected menu are displayed in the same color, which is different from the predetermined color, so that a user can easily recognize a menu currently selected by him or her and its processing path.

FIG. 1
CONVENTIONAL ART

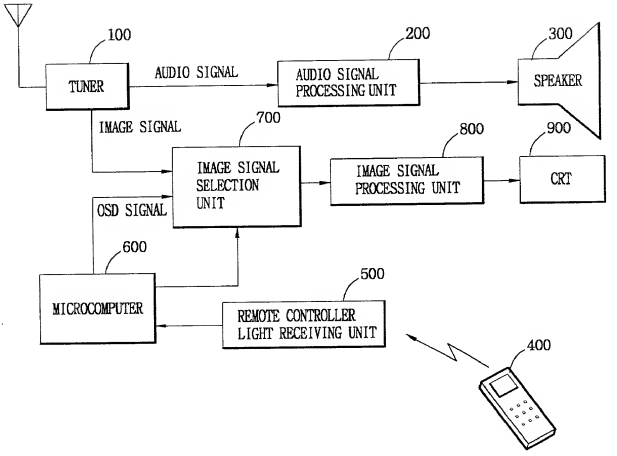


FIG. 2A
CONVENTIONAL ART

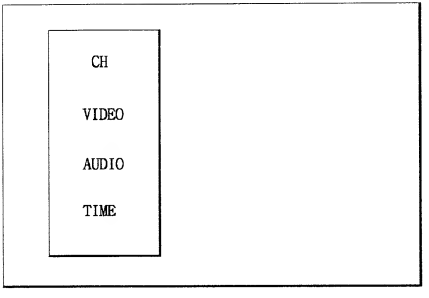


FIG. 2B
CONVENTIONAL ART

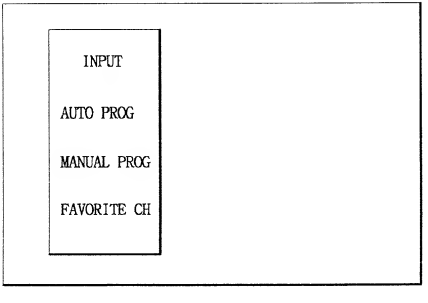


FIG. 3

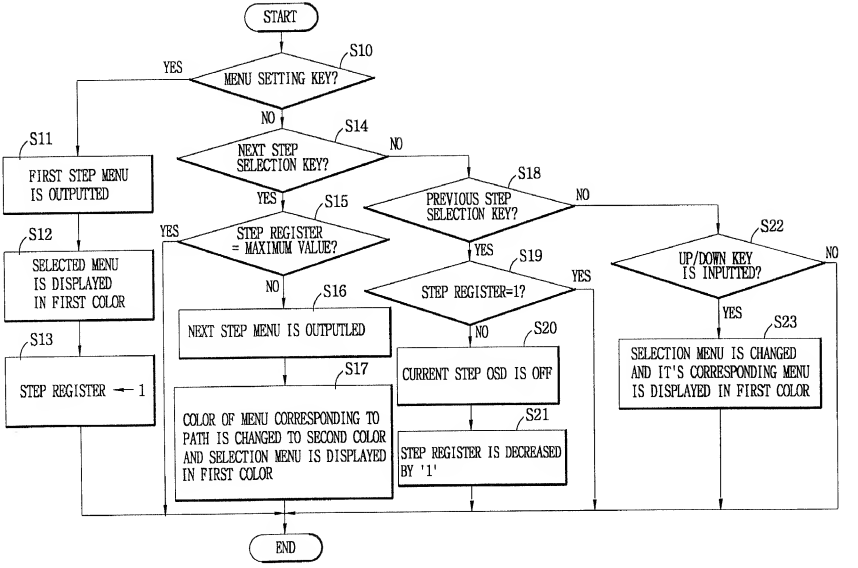

START
S10
MENU SETTING KEY?
YES
NO
S11
FIRST STEP MENU IS OUTPUTTED
S12
SELECTED MENU IS DISPLAYED IN FIRST COLOR
S13
STEP REGISTER ← 1
S14
NEXT STEP SELECTION KEY?
NO
YES
S15
STEP REGISTER = MAXIMUM VALUE?
YES
NO
S16
NEXT STEP MENU IS OUTPUTLED
S17
COLOR OF MENU CORRESPONDING TO PATH IS CHANGED TO SECOND COLOR AND SELECTION MENU IS DISPLAYED IN FIRST COLOR
S18
PREVIOUS STEP SELECTION KEY?
NO
YES
S19
STEP REGISTER=1?
YES
NO
S20
CURRENT STEP OSD IS OFF
S21
STEP REGISTER IS DECREASED BY '1'
S22
UP/DOWN KEY IS INPUTTED?
NO
YES
S23
SELECTION MENU IS CHANGED AND IT'S CORRESPONDING MENU IS DISPLAYED IN FIRST COLOR
END

FIG. 4

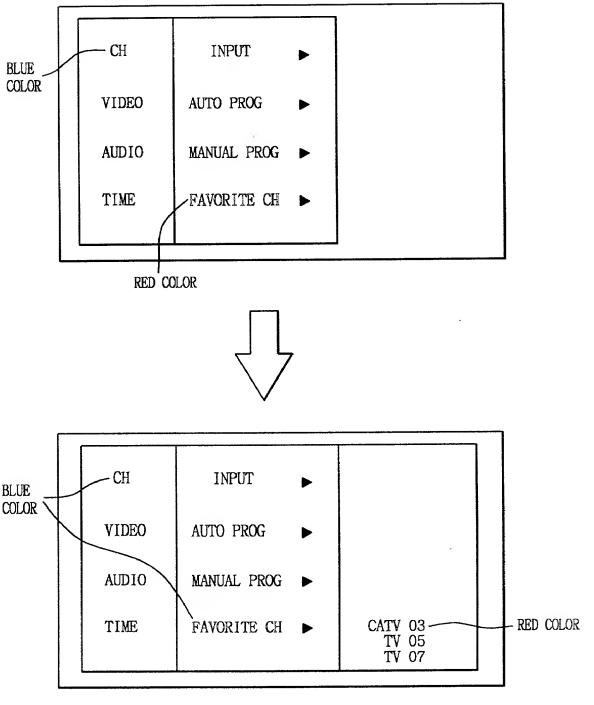

BLUE COLOR
CH
INPUT
VIDEO
AUTO PROG
AUDIO
MANUAL PROG
TIME
FAVORITE CH
RED COLOR
BLUE COLOR
CH
INPUT
VIDEO
AUTO PROG
AUDIO
MANUAL PROG
TIME
FAVORITE CH
CATV 03
TV 05
TV 07
RED COLOR

FIG. 5

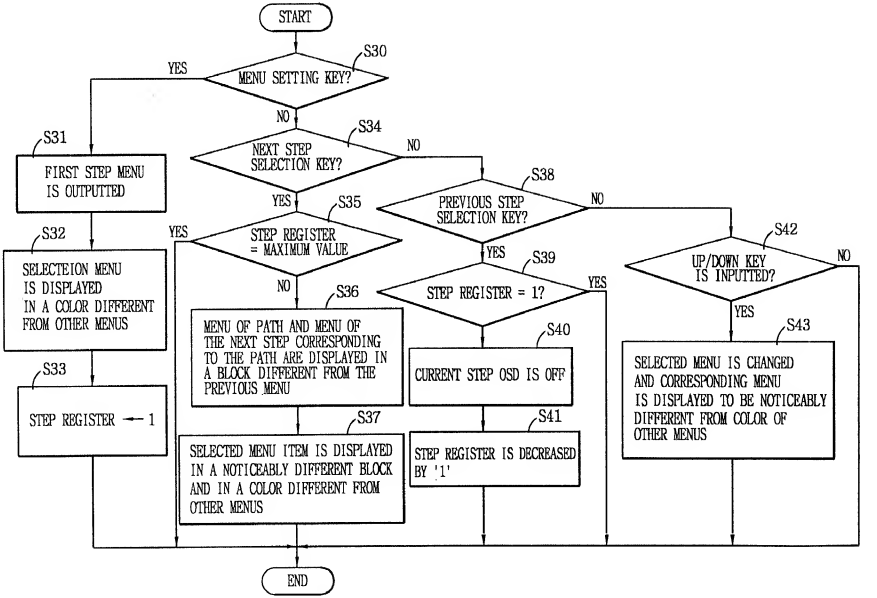
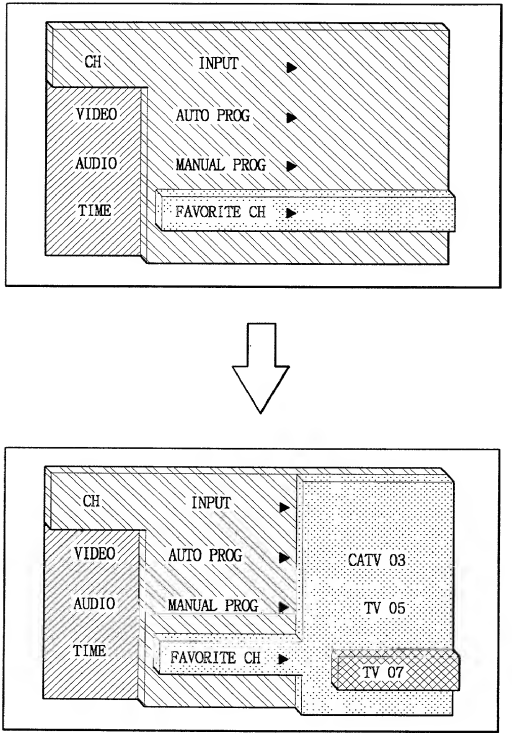

START
S30
MENU SETTING KEY?
YES
NO
S31
FIRST STEP MENU IS OUTPUTTED
S34
NEXT STEP SELECTION KEY?
NO
YES
S38
PREVIOUS STEP SELECTION KEY?
NO
YES
S42
UP/DOWN KEY IS INPUTTED?
NO
YES
S32
SELECTEION MENU IS DISPLAYED IN A COLOR DIFFERENT FROM OTHER MENUS
S35
STEP REGISTER = MAXIMUM VALUE
YES
NO
S39
STEP REGISTER = 1?
YES
NO
S43
SELECTED MENU IS CHANGED AND CORRESPONDING MENU IS DISPLAYED TO BE NOTICEABLY DIFFERENT FROM COLOR OF OTHER MENUS
S33
STEP REGISTER ← 1
S36
MENU OF PATH AND MENU OF THE NEXT STEP CORRESPONDING TO THE PATH ARE DISPLAYED IN A BLOCK DIFFERENT FROM THE PREVIOUS MENU
S40
CURRENT STEP OSD IS OFF
S37
SELECTED MENU ITEM IS DISPLAYED IN A NOTICEABLY DIFFERENT BLOCK AND IN A COLOR DIFFERENT FROM OTHER MENUS
S41
STEP REGISTER IS DECREASED BY '1'
END

FIG. 6


CH
INPUT
VIDEO
AUTO PROG
AUDIO
MANUAL PROG
TIME
FAVORITE CH
CH
INPUT
VIDEO
AUTO PROG
CATV 03
AUDIO
MANUAL PROG
TV 05
TIME
FAVORITE CH
TV 07

BIRCH, STEWART, KOLASCH & BIRCH, LLP

PLEASE NOTE: YOU MUST COMPLETE THE FOLLOWING:

COMBINED DECLARATION AND POWER OF ATTORNEY

FOR PATENT AND DESIGN APPLICATIONS

ATTORNEY DOCKET NO. 0630-1061P

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated next to my name; that I verily believe that I am the original, first and sole inventor (if only one inventor is named below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Insert Title: METHOD FOR DISPLAYING MENU SCREEN OF VIDEO APPARATUS

Fill in Appropriate Information - For Use Without Specification Attached:

the specification of which is attached hereto. If not attached hereto,

the specification was filed on _____ as

United States Application Number _____; and /or

the specification was filed on _____ as PCT

International Application Number _____; and was

amended under PCT Article 19 on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (six months for designs) prior to this application, and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 (a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Insert Priority Information: (if appropriate)

Prior Foreign Application(s)

(Number)	(Country)	(Month/Day/Year Filed)	Priority Claimed
10125/1999	Korea	03/24/1999	☒ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

Insert Provisional Application(s): (if any)

(Application Number) (Filing Date)

(Application Number) (Filing Date)

All Foreign Applications, if any, for any Patent or Inventor's Certificate Filed More Than 12 Months (6 Months for Designs) Prior To The Filing Date of This Application:

Insert Requested Information: (if appropriate)

Country	Application No	Date of Filing (Month/Day/Year)

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Insert Prior U.S. Application(s): (if any)

(Application Number) (Filing Date) (Status - patented, pending, abandoned)

(Application Number) (Filing Date) (Status - patented, pending, abandoned)

I hereby appoint the following attorneys to prosecute this application and/or an international application based on this application and to transact all business in the Patent and Trademark Office connected therewith and in connection with the resulting patent based on instructions received from the entity who first sent the application papers to the attorneys identified below, unless the inventor(s) or assignee provides said attorneys with a written notice to the contrary:

Terrell C. Birch	(Reg. No. 19,382)	Raymond C. Stewart	(Reg. No. 21,066)
Joseph A. Kolasch	(Reg. No. 22,463)	James M. Slattery	(Reg. No. 28,380)
Bernard L. Sweeney	(Reg. No. 24,448)	Michael K. Mutter	(Reg. No. 29,680)
Charles Gorenstein	(Reg. No. 29,271)	Gerald M. Murphy, Jr.	(Reg. No. 28,977)
Leonard R. Svensson	(Reg. No. 30,330)	Terry L. Clark	(Reg. No. 32,644)
Andrew D. Meikle	(Reg. No. 32,868)	Marc S. Weiner	(Reg. No. 32,181)
Joe McKinney Muncy	(Reg. No. 32,334)	Donald J. Daley	(Reg. No. 34,313)
C. Joseph Faraci	(Reg. No. 32,350)		

Send Correspondence to: **BIRCH, STEWART, KOLASCH & BIRCH, LLP**
P.O. Box 747 • Falls Church, Virginia 22040-0747
Telephone: (703) 205-8000 • Facsimile: (703) 205-8050

PLEASE NOTE: YOU MUST COMPLETE THE FOLLOWING:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Sole Inventor: Insert Name of Inventor. Insert Date This Document is Signed. Insert Residence. Insert Citizenship. Insert Post Office Address.

GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Jae Kyung	LEE	Jae Kyung Lee	2000.3.14
Residence (City, State & Country)		CITIZENSHIP	
Daeku, Korea		Republic of Korea	
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			
Hansin 1st Apt. 104-203, 39, Kwaneum-Dong, Buk-Ku, Daeku, Korea			

Full Name of Second Inventor, if any: see above

GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Ji Yeon	HWANG	Ji Yeon Hwang	2000.3.14
Residence (City, State & Country)		CITIZENSHIP	
Seoul, Korea		Republic of Korea	
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			
Kangbyun Apt. 1-405, 53-15, Jamwon-Dong, Seocho-Ku, Seoul Korea			

Full Name of Third Inventor, if any see above

GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)		CITIZENSHIP	
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			

Full Name of Fourth Inventor, if any see above

GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)		CITIZENSHIP	
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			

Full Name of Fifth Inventor, if any see above

GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)		CITIZENSHIP	
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			

* DATE OF SIGNATURE